AMENDMENTS TO THE DRAWINGS

Please replace the sheet of drawings by the replacement sheet of drawings with amended Fig. 2 which is submitted with this paper. The replacement sheet does not add any new matter.

REMARKS

By the present amendment, the abstract and Fig. 2 have been amended to show legends from the description corresponding to reference numerals 12-20 in the specification.

Further, in claim 1, the expression "and/or" has been replaced by "at least one of (i)… and (ii)…" in the last clause and the expression "or" has been amended accordingly in the clause of the "detection means." Also, the word "state" has been corrected to "stage" in that clause.

Also, in claims 1 and 2, the expression "the or each post-injection" has been replaced by "the post-injections."

Also, claim 1 has been amended for legibility to recite that the performing means is for immediately interrupting the post-injections if the total quantity of fuel that has been injected through post-injections since the start of the post-injections during the stage of returning to idling reaches the predetermined maximum quantity during this stage of returning to idling, and (ii) progressively reducing the post-injections as soon as the total quantity of fuel that has been injected through post-injections since the start of the post-injections during the stage of the engine idling reaches the predetermined maximum quantity during this stage of the engine idling.

New dependent claim 8 has been added to recite means for detecting (i) a state in which the vehicle accelerator pedal is being raised and (ii) a stage in which the vehicle engine is idling.

New dependent claim 9 has been added to recite means for detecting a stage in which the vehicle accelerator pedal is being raised, and means for immediately interrupting the post-injections if the total quantity of fuel that has been injected through post-injections since the

start of the post-injections during the stage of returning to idling reaches the predetermined maximum quantity during this stage of returning to idling.

New dependent claim 10 has been added to recite means for detecting a stage in which the vehicle engine is idling, and means for progressively reducing the post-injections as soon as the total quantity of fuel that has been injected through post-injections since the start of the post-injections during the stage of the engine idling reaches the predetermined maximum quantity during this stage of the engine idling.

In addition, new method claims 11-20 corresponding to system claims 1-10 has been added. Thus, claims 1 and 11 recite a common special technical feature that defines a contribution to the art. Since the present application is a national stage of a PCT application, it is submitted that system and method claims should be examined together in accordance with PCT "unity of invention" rules.

Claims 1-20 are pending in this application. Claims 1 and 11 are the only independent claims.

In the Office Action, Fig. 2 is objected to as insufficiently described.

A replacement sheet is submitted with this paper, in which Fig. 2 is amended to show legends from the description corresponding to reference numerals 12-20 in the specification as follows:

- 12: detect accelerator pedal raised or engine idling
- 13: acquire temperature downstream from catalyst-forming means
- 14: determine maximum quantity to be injected during post-injections

- 15: monitor quantity of fuel injected
- 16: predetermined maximum quantity reached?
- 17: accelerator pedal raised
- 18: interrupt post-injection
- 19: engine idling
- 20: reduce post-injection progressively

In view of the above, it is submitted that the objection should be withdrawn.

Next, in the Office Action, the abstract is objected to as being too long and using legalistic language.

The abstract has been amended to eliminate the "means" language and to reduce the length to 140 words. Accordingly, it is submitted that the objection should be withdrawn.

Next, in the Office Action, claims 1-7 are rejected under 35 U.S.C. 112, first paragraph, as lacking enablement in being contradictory because of the expression "and/or" in the last clause of claim 1.

The expression "and/or" has been replaced by "at least one of (i)… and (ii)…" in claim 1. Accordingly, it is submitted that the rejection should be withdrawn.

Next, in the Office Action, claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as indefinite because of the expression "the or each" in claims 1 and 2.

The expression "the or each post-injection" has been replaced by "the post-injections" in claims 1 and 2. Accordingly, it is submitted that the rejection should be withdrawn.

Next, in the Office Action, claims 1-7 are rejected under 35 U.S.C. 103(a) as obvious over US 6,666,020 to Tonetti et al. ("Tonetti"). It is alleged in the Office Action that Tonetti discloses the features of present claim 1 except immediate interruption or progressive reduction of the post-injections, but that this modification would have been obvious because Tonetti allegedly discloses proportional regulation of the post-injection as a function of the exhaust temperature.

The rejection is respectfully traversed. In the present invention, the "predetermined maximum quantity" is a "total quantity of fuel that has been injected through post-injections since the start of the post-injections during this period." Thus, in the present invention, the "predetermined maximum quantity" is a cumulated amount and not an amount for each post-injection per engine cycle.

Thus, as recited in present claim 1, the present invention includes means for performing at least one of (i) immediately interrupting the post-injections if the total quantity of fuel that has been injected through post-injections since the start of the post-injections during the stage of returning to idling reaches the predetermined maximum quantity during this stage of returning to idling, and (ii) progressively reducing the post-injections as soon as the total quantity of fuel that has been injected through post-injections since the start of the post-injections during the stage of the engine idling reaches the predetermined maximum quantity during this stage of the engine idling.

It is submitted that this feature of present claims 1-10 is not taught or suggested in Tonetti, because Tonetti is completely silent as to the problems created by permanent post-injections in an idling engine (reduced temperature and oil dilution), and in addition, Tonetti does not suggest

addressing this problem by (i) setting a threshold for accumulated quantity of fuel injected through post-injections when the engine is idling (or returning to idling), and (ii) when this threshold is reached, interrupting or progressively reducing the post-injections. In particular, the regulation type of the present invention is completely different from a "proportional" regulation as disclosed at col. 10, lines 41-43 of Tonetti, to which reference is made, because such "proportional" regulation as in Tonetti focuses on a regulation per engine cycle, which is completely different from using as a control threshold a maximum cumulated quantity of fuel injected through post-injections during a particular stage.

In other words, the present invention focuses on setting a global cap on the amount of fuel that will be post-injected by the engine under the regeneration strategy during a period where the engine is idling (or returning to idling). Once this total cap is reached, the volume of each post-injections will be interrupted or progressively reduced.

Thus, the maximum quantity as recited in the present invention is a predetermined value that will be reached once the successive volumes injected by each post-injection will have added up to this "maximum quantity." At that point, according to the invention, the post-injections will be interrupted or reduced progressively.

The "predetermined maximum quantity" of the present invention is illustrated by the exemplary embodiment of a supply which is emptied progressively during the period of idling (or accelerator pedal being raised), then reinitialized at the end of the period (see description at page 6, lines 20-24). The supply corresponds to the "total quantity" allowed for post-injections under the regeneration strategy during a period of idling. As soon as post-injections start during that

period, the supply is progressively emptied. Once the supply will be empty, the "maximum quantity" allowed for implementing the regeneration strategy will have been reached, and the system will interrupt or progressively reduce the post-injection.

Thus, in the presently claimed invention, a parameter, which is the total amount since the start of post-injections during a period of idling, is used to trigger the interruption or progressive reduction of the post-injections. This is completely different from setting a maximum for the volume of each post-injection, which would be the variable controlled in Tonetti. As a result, Tonetti completely fails to teach or suggest a system according to present claim 1, and in particular means for detecting at least one of (i) a stage in which the vehicle accelerator pedal is being raised and (ii) a stage in which the vehicle engine is idling; and means for performing at least one of (i) immediately interrupting the post-injections if the total quantity of fuel that has been injected through post-injections since the start of the post-injections during the stage of returning to idling reaches the predetermined maximum quantity during this stage of returning to idling, and (ii) progressively reducing the post-injections as soon as the total quantity of fuel that has been injected through post-injections since the start of the post-injections during the stage of the engine idling reaches the predetermined maximum quantity during this stage of the engine idling, as recited in present claim 1. Therefore, present system claims 1-10 are not anticipated by, and not obvious over, Tonetti.

Further, it is submitted that the obviousness rationale under 2007 Supreme Court decision in *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (2007) does not lead a different conclusion. Namely, contrary to the assertion in the Office Action, adjusting post-injections by

setting a threshold for the total quantity of fuel that has been injected through post-injections in a particular stage is not a "known technique" so that applying it to other situations is not "implied by the teachings of Tonetti et al." as asserted at page 5, last paragraph of the Office Action.

Further, it is submitted that the present situation does not meet any of the proposed "rationales (A)-(G)" in the USPTO Guidelines of October 10, 2007. Rationales (A)-(D) do not apply because there is no indication that a preset threshold is a "known technique" for regulating post-injections in rich mode. Rationale (E) does not apply because Tonetti is silent as to a set threshold so there is no prediction as to whether the modification would work. Rationale (F) is not available because there is no indication of particular market forces or design incentives to regulate post-injections in this manner. Rationale (G) is not available, because there is no indication of any teaching, suggestion, or motivation in Tonetti for the technical features of the present invention.

In summary, far from being a modified application of "known technique," the present invention provides an effective solution to a technological problem that is not even identified in Tonetti. The features of the presently claimed invention and their advantages are not taught or suggested in Tonetti. Therefore, present claim 1 is not anticipated by, and not obvious over, Tonetti.

In addition, with respect to the dependent claims, it is submitted that Tonetti completely fails to teach or suggest the combined features of each of these respective claims. Therefore, each of the dependent claims is not anticipated by, and not obvious over, Tonetti.

Also, with respect to new claims 11-20, it is submitted that Tonetti fails to teach or suggest the features of claims 11-20 for the same reasons as discussed above.

In view of the above, it is submitted that the rejection should be withdrawn.

Next, in the Office Action, claims 1-7 are provisionally rejected under 35 U.S.C. 101 as identical to the claims of co-pending application No. 10/595,623.

The rejection is respectfully traversed. The co-pending '623 application recites a "maximum duration" parameter rather than a "maximum fuel quantity" parameter. Specifically, claim 1 of the '623 application recites:

> - means for responding to said temperature to determine a maximum duration of post-injection application during stages in which the engine is returning to idling as a result of the accelerator pedal being raised and stages during which the engine is idling; and
>
> - means for immediately interrupting the or each post-injection if the duration of post-injection utilization reaches the predetermined maximum duration of application during a stage of returning to idling, and/or for progressively reducing the or each post-injection when the duration of post-injection utilization reaches the predetermined maximum duration of application during a stage of the engine idling.

(Emphasis added.) Thus, the features of the present claims are completely different from the features of the claims in the '623 application. Therefore, each of the present claims is not obvious over the claims of the '623 application taken alone or in any combination.

In view of the above, it is submitted that the rejection should be withdrawn.

In conclusion, the invention as presently claimed is patentable. It is believed that the claims are in allowable condition and a notice to that effect is earnestly requested.

In the event there is, in the Examiner's opinion, any outstanding issue and such issue may be resolved by means of a telephone interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

In the event this paper is not considered to be timely filed, the Applicants hereby petition for an appropriate extension of the response period. Please charge the fee for such extension and any other fees which may be required to our Deposit Account No. 502759.

Respectfully submitted,

/nicolas seckel/

Nicolas E. Seckel
Attorney for Applicants
Registration No. 44,373

Nicolas E. Seckel
Patent Attorney
1250 Connecticut Avenue, NW Suite 700
Washington, DC 20036
Tel: 202-669-5169
Fax: 202-822-1257
Customer No.: 29980
NES/rep